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used simultaneously may be able to accomplish what no one of them could do. This is beautifully illustrated in a theory communicated to me by F. W. Frankland, using a cosmic medium in which small regions of elliptic and hyperbolic space alternate, given a strain toward parabolic space which produces an elasticity or resilience simulating the properties with which physicists have endowed their hypothetical ether.

GEORGE BRUCE HALSTED.

UNIVERSITY OF TEXAS.

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THE AMERICAN ASSOCIATION FOR THE  
ADVANCEMENT OF SCIENCE.

SECTION H, ANTHROPOLOGY.

THE effect of environment on the success of a meeting was well demonstrated at Denver. Local interest in the Section of Anthropology, fostered by the Colorado Cliff Dwellings' Association, had reached such a pitch even in advance of the opening session that the small room originally intended for the Section was abandoned for one with a seating capacity of 200. This large room was converted into a bazaar of rare aboriginal ceramics, Navajo blankets, basketry and pictures of Indian scenes by a committee from the Cliff Dwellings Association consisting of Mrs. J. D. Whitmore, Mrs. G. T. Sumner and Mrs. W. S. Peabody, all of Denver.

The meeting was memorable for sustained interest. The attendance was unprecedented, averaging at least 150 for the morning sessions; the afternoon audiences were also large.

Section H was organized on Monday morning, August 26, after the adjournment of the General Session, in accordance with the provisions of the constitution. The officers for the Denver meeting were as follows:

*Vice-President*, J. Walter Fewkes.

*Secretary*, George Grant MacCurdy.

*Sectional Committee*: A. W. Butler, vice-president, Section H, 1900; Frank Russell, secretary, Section H, 1900; J. Walter Fewkes, vice-president, Section H, 1901; George Grant MacCurdy, secretary, Section H, 1901; Mrs. M. L. D. Putnam, Frank W. Blackmar, G. A. Dorsey.

*Member of Council*, W. J. McGee. *Member of General Committee*, Mrs. W. S. Peabody.

Retiring Vice-president Butler's address, entitled, 'A Notable Factor in Social Degeneracy,' was delivered Monday afternoon. It was printed in SCIENCE of September 20.

The titles of papers presented before the Section are accompanied by brief abstracts in so far as it has been possible to secure these from the authors.

1. 'Exhibit of Curves of Speech': E. W. SCRIPTURE.

An exhibit of a series of plates containing the curves of vibration traced from a gramophone plate containing Rip Van Winkle's Toast spoken by Joseph Jefferson. In the absence of the author, the paper was presented by Mr. MacCurdy. It will be printed in Scripture's 'Elements of Experimental Phonetics.'

2. 'Influences of Racial Characteristics on Socialization': FRANK W. BLACKMAR.

Racial characteristics are the great barriers that prevent a complete socialization of the human race; the race idea, or consciousness on the part of two groups of people that they are different in origin and structure is a detriment to perfect social union; a transition from the old family, or ethnographic, status to the modern, or demographic, society has been exceedingly difficult; the race idea has been the hindering cause in the progress of democracy; the historical examples of the social difficulties of Greece, Rome the Iroquois tribes and the Aztec federation; the difficulties of socialization appear in the development of homogeneous society in large cities; difficulties arising from an attempt to socialize widely divergent races; when common marriage relations are pro-

hibited by law, custom or prejudice the basis for social amalgamation is wanting; the inter-marriage of superior and inferior races results in an offspring inferior to the lowest of the united races. It is possible, however, through artificial selection, to unite the best elements of each race and hence raise the standard of the lower race. The variation in results from the inter-marriage of widely differentiated races as observed in the characteristics of the offspring.

It must be observed then, first, that a perfect social union is not possible between races that cannot intermarry; second, that intermarriage is not probable among widely divergent races if once included in the same social system; third, that intermarriage is not desirable between widely divergent races because controlled by lower sentiments and usually practiced by the lower elements, thus leading to degeneration; fourth, that race prejudice, so far as it prevents the union of widely divergent races, is good rather than evil. When different races, widely separated as to origin or widely divergent in culture, live under the same government, each must have its place; a government founded on justice must protect the weaker race and preserve its rights; examples from studies of the social and political status of the African race in America; examples from studies of the social and political status of the American Indians; a plea for a more careful study of races as a basis for socialization and a means for procuring rational legislation.

Discussion: Butler pointed out the necessity of understanding the psychic standpoint of a people in order to understand the influences of race or culture. McGee emphasized the invigorating influences of blood-blending when the stocks are not too greatly diverse, as shown, for example, by the British and American peoples, and then

mentioned culture as a factor of paramount importance in ethnic and demotic development. This paper was also discussed by Russell and Dorsey.

3. 'The Anthropological Collections of Yale University Museum': GEORGE GRANT MACCURDY.

An abridged statement relative to the size and character of the collections which, it is hoped, may be of service to students making a comparative study of museums of anthropology. They comprise from 15,000 to 18,000 specimens representing geographically thirty-six states and territories, Hawaii and the Philippines, besides forty foreign countries. The greater part of the material is archeological. The antiquities from Central America alone number over 3,000, including fifty-three gold ornaments from the Province of Chiriqui. The collection of Missouri pottery, more than 1,000 pieces in all, is one of the largest and best in the country. A representative series from the Quaternary and cavern deposits of western Europe, the Swiss Lake Dwellings, and the shell heaps and dolmens of Scandinavia has recently been installed. In respect to physical anthropology, the museum possesses several hundred crania, chiefly Amerindian, Hawaiian and New Guineaian.

4. 'Report on Work recently done by the Department of Anthropology, Field Columbian Museum': by the curator, GEORGE A. DORSEY.

Discussion: J. Walter Fewkes.

5. 'Political and Social Conditions in the Hawaiian Islands': DAVID STARR JORDAN.

6. 'Notes on Criminal Anthropology': AMOS W. BUTLER. A study of the individual family characteristics of inmates of the Indiana Reformatory. The results of four years of operation of the indeterminate sentence and parole law in that State.

7. 'The Nature of Sun Worship': J. WALTER FEWKES.

The two chief gods of the Pueblos are the sky god and the earth goddess. The sky god has a variety of names, some of which are the same as his attributes, as: wind, lightning, rain, etc.; others are simply clan names for the same god. The sun god is a being symbolized by the sun. The sun is a shield carried by the sky god. This sky god or sun god (the names are interchangeable) is the male principle—*i. e.*, the god of germs. His house is in the underworld. The female principle is the earth goddess, the goddess of germs. The god of fire was a god of life which practically originated as sky god. Differentiation came later. Inasmuch as the underworld was the home of the sky god and also regarded as the home of the dead, the sun as ruler of the underworld was regarded as the god of death. The sky god and earth goddess are personated by animal forms and the names of these animals are sometimes applied to them, *e. g.*, the sky god is often called the thunder bird. So the earth goddess is called the spider woman. Thus, in popular stories, they say the spider woman created man. Creation, as we understand it, is a foreign conception to primitive man; it is always akin to birth. The sky god and earth goddess are father and mother to all men, and animals as well. The earth is preexisting in their belief. Religious beliefs and practices are simply magical. Primitive man believes that everything has a magic power. The earth has magic power. The sky is regarded as a solid body and has its magic power. Every man, animal and object has its magical power, and the object of worship is to make use of this magical power to bring about desired results. For example, suppose a man wishes to bring rain. He owns certain fetiches whose magic power is great enough to compel the magic power of the sky to make it rain. He knows certain songs or prayers which will do the same.

He exerts this power in the form of a rite or ceremony.

8. 'Some Remarks upon the Attitude of the Citizens of the Southwest toward Archaeology': FRANK RUSSELL.

A paper based upon observations made during an extended archeological reconnaissance in Arizona and adjoining territories. This research developed the fact that the average ranchman or miner takes an active interest in the antiquities of his locality, and usually formulates theories that are sometimes startling to the archeologist. The author also discussed the attitude of the Mormons, the extent of unscientific exploration and vandalism; besides relating personal experiences.

Discussion: Dorsey, Fewkes and Hewitt.

9. 'The Proposed Cliff Dwellers' National Park': EDGAR L. HEWITT.

The following is a summary of Mr. Hewitt's paper:

(a) The geological conditions of Pajarito Park, illustrated by photographs and an archeological map. (b) Nature and extent of the ruins thereon; illustrated by photographs of cavate lodges; ground plans of ruins known as Tehrega, Navakwa, Tsankawi and Otowi; maps of mesas on which these ruins are situated, and restorations in water-color of Tehrega and one section of cliff showing cavate lodges. (c) The pictography of the ancient inhabitants, illustrated by series of photographs from Puye and Pajarito. (d) Historical sketch of the movement providing for the setting aside of the Pajarito region as a national park. (e) Discussion of House Bill No. 13,071, known as the Lacey Bill.

Discussion: Blackmar, Fewkes, Dorsey and McGee. The last named emphasized the necessity of preservation of antiquities. He had drafted a general law for the preservation of antiquities on lands belonging to the United States. Had it passed, it would be easy to have states act on lands belong-

ing to them. The Public Lands Committee has recommended the setting apart of Pajarito Park as a national park to be called 'The Cliff Dwellers' National Park.'

One of the direct results of Mr. Hewitt's paper was the appointing of the following committee to draft resolutions on the preservation of the ancient monuments of the Southwest:

Edgar L. Hewitt, Chairman,  
Amos W. Butler,  
George A. Dorsey,  
George Grant MacCurdy.

The report of this committee, after being accepted by the Section, was adopted by the Council and read in general session Friday morning.

10. 'Some Pawnee and Wichita Games':  
GEORGE A. DORSEY.

Discussion: Russell, Culin, McGee and Fewkes.

11. 'The Teaching of Anthropology in the United States': GEORGE GRANT MAC-CURDY.

Information relative to the teaching of anthropology in our institutions of learning, collected at the request of the 'Committee on the Teaching of Anthropology in America.' It was found upon investigation that thirty-one universities and colleges now offer instruction in anthropology. They are: Beloit College, Beloit, Wis.; Bellevue College, Bellevue, Nebr.; Boston University; Brown University; Clark University; College of Physicians and Surgeons, Boston; Columbia University; Columbian University, Washington, D. C.; Creighton University, Omaha, Neb.; Dartmouth; Georgetown University, Washington, D. C.; Harvard; National University, Washington, D. C.; New York University; Niagara University, Niagara County, N. Y.; Phillips Academy, Andover, Mass.; Ohio State University, Columbus; University of California; University of Chicago; the Universities of Illinois, Indiana, Kan-

sas, Minnesota, Missouri, Nebraska, Pennsylvania, Vermont, and Wisconsin; Western Reserve University; Willamette University, Salem, Oregon; Yale University. Of the thirty-one institutions offering anthropology, it is found to be an adjunct of sociology in nine, of philosophy in five, of psychology in three, of geology and zoology in five, and of medicine in one; while in five instances it stands practically alone and in three it is unclassified.

Discussion: Blackmar, McGee, Dorsey and Farrell.

This paper will be printed in SCIENCE.

12. 'Current Questions in Anthropology':  
W J MCGEE.

Discussion: Russell, Dorsey and others.

13. 'Analogy between Writing and Speech': ROBERT ARMSTRONG.

(a) All alphabetic characters are analogous, in (1) *material* and in (2) *function*, to the voice elements. (b) Written or printed letters have usually no analogy of character to the sound elements they represent. (c) Perfect analogy between graphic signs and spoken sounds is not attainable. But in proportion as alphabetic signs can be modeled from the sound elements they respectively represent, written or printed words will approach spoken words in character, and hence, in facility, economy and all that is desirable in written or printed words.

Charts were used in illustration of the subject.

14. 'Notes on the Archeology of Cuba':  
STEWART CULIN.

15. 'The Problem of the Cliff Dwellers':  
J. WALTER FEWKES.

A discussion of the relation of ancient Cliff Dwellers to modern Pueblos, showing a kinship in culture which does not, however, imply a kinship of blood. There was at least some kinship of blood. Some of the cliff houses in the Cañon de Chelly have been inhabited in historic times. There is a clan living now at Moki whose ancestors

once lived in the Chelly cañon. A very old woman of Moki still lives whose mother was born in a Chelly cañon cliff house. The cliff house may have been very old at that time, however. There are some very old cliff houses, while others are comparatively modern.

Discussion: Dorsey, Holsinger and ex-Governor Prince, of New Mexico. Governor Prince said the territory of New Mexico had offered the Old Palace in Santa Fé as a branch of the Smithsonian Institution.

A paper by J. Crawford on 'Sculptured Stone Images of Man by the Aborigines in Nicaragua,' and one by Charles E. Slocum, entitled, 'A Plea for Greater Simplicity and Greater Accuracy, in the Writings of the Future, regarding the American Aborigines,' were read by title.

On Tuesday, at 4 p. m., Section H adjourned to hear Mrs. John Hayes Hammond's lecture on 'The Cliff Dwellings of Colorado,' illustrated by lantern slides.

Dr. Fewkes's lecture Friday evening, on 'The Moki Snake Dance,' illustrated by lantern slides, was also of special interest to anthropologists, though not a part of the regular program.

A letter was read from Miss Alice C. Fletcher, who, in her enforced absence on account of illness, sent greetings to the Section; also a letter from Mrs. Daniel G. Brinton, to the effect that a new edition of 'The American Race' would appear in September of this year.

The report of the 'Committee on the Teaching of Anthropology in America,' which was read before Section H by Dr. McGee, was printed in SCIENCE of September 6, p. 353.

The report of the 'Committee on Anthropometric Measurements,' including the request for a grant of \$50, was recommended and later adopted by the Council.

Section H was authorized to hold a winter meeting, the time and place to be decided

upon by the Sectional Committee. The winter meeting will be held in Chicago during Convention Week of 1901-02.

The newly elected officers for the Pittsburgh meeting are:

*Vice-President*, Stewart Culin, of the University of Pennsylvania.

*Secretary*, Harlan I. Smith, of the American Museum of Natural History, New York.

The invitation extended to Section H by Mr. and Mrs. Gilbert McClurg, of Colorado Springs, to inspect their cliff dwelling collection on Monday, September 2, was very generally accepted. The same week, a party of anthropologists visited the cliff dwellings of the Mesa Verde in southwestern Colorado as guests of the ladies of the Directorate of the Colorado Cliff Dwellings Association, of which Mrs. McClurg is Regent.

GEORGE GRANT MACCURDY,  
*Secretary of Section H.*

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EARLY WINTER COLORS OF PLANT FORMATIONS ON THE GREAT PLAINS.\*

ONE who has not been upon the Great Plains in the early winter, after the autumn frosts have changed the prevailing green of the landscape, can have little conception of the variety of the colors which meet the eye. These include several shades of red, two or more of orange, one or more of yellow, two of green, a dark blue, a purple, several browns and blacks, and many grays. With a little practice the eye can distinguish from twenty to twenty-five shades of color, sometimes blending into one another almost insensibly, or standing out in marked contrast upon the landscape picture.

It does not require long study to show that so far as the natural vegetation is concerned these colors conform to the distribution of the various plant formations, and

\* Read before the meeting of the Botanical Society of America, in Denver, August, 1901.